REMARKS

The Office Action dated August 28, 2006 has been received and carefully noted. The following remarks are submitted as a full and complete response thereto. Claims 1-17 are currently pending in the application and are respectfully submitted for consideration.

Claims 1-14 were rejected under 35 U.S.C. §103(a) as being unpatentable over Eidson (U.S. Patent No. 6,255,906) in view of Fukasawa (U.S. Patent No. 5,715,521). The Office Action took the position that Eidson discloses all of the elements of the claims, with the exception of receiving an instruction to adjust the output power of the power amplifier. The Office Action then relies upon Fukasawa as allegedly curing this deficiency in Eidson. The rejection is respectfully traversed for the reasons which follow.

Claim 1, upon which claims 2-7 are dependent, recites a method which includes receiving an instruction to adjust the output power of power amplifier, powering on or off at least one branch of the power amplifier according to the received instruction to enable a logarithmic change in output power of the amplifier, and amplifying a signal according to the adjusted output power.

Claim 8 recites a system including means for receiving an instruction to adjust the output power of power amplifier, means for powering on or off at least one branch of the power amplifier according to the received instruction to enable a logarithmic change in output power, and means for amplifying a signal according to the adjusted output power.

Claim 9, upon which claims 10-14 are dependent, recites a system including a receiving engine capable of receiving an instruction to adjust the output power of power amplifier, and a determining engine, communicatively coupled to the receiving engine, capable of determining how many branches of a power amplifier to power on or off according to the received instruction to enable a logarithmic change in output power. The system also includes a power amplifier engine, communicatively coupled to the determining engine and the power amplifier, capable of transmitting the determination to the power amplifier.

According to certain embodiments of the invention, therefore, a system and method are provided that enable power control capability in a linear power amplifier from a maximum output power to a minimum output power in linear steps of 2dBm there between. Accordingly, power amplifier output power can be adjusted linearly in dB according to power needs, thereby reducing overall power consumption.

As will be discussed below, Eidson and Fukasawa, whether considered alone or in combination, fail to disclose or suggest all of the elements of the claims, and therefore fails to provide the advantages and features discussed above.

Eidson discloses a power amplifier operated as an envelope digital to analog converter with digital predistortion. In order to reproduce a particular envelope profile, a selected number of the power amplifiers of the power amplifier array is switched on, whereas another selected number of the power amplifiers of the power amplifier array are switched off. All elements are fed with an RF signal containing phase information as

well. The amplified, output signal provided after the power amplifier array is fed to an antenna for signal transmission. Impedance matching circuitry is employed between the power amplifier array and the antenna to provide efficiency for those applications having low power budgets or seeking to operate with extremely high efficiency.

Fukasawa discloses a method for controlling synchronization signal power in a communication system. Specifically, a first station generates a synchronization signal and sends the synchronization signal to a second station. When the second station detects the synchronization signal, the second station acquires synchronization and sends a synchronization-acquisition message back to the first station. The first station then reduces the power of the synchronization signal, while continuing to send the synchronization signal, and also begins sending a modulated data signal. The second station uses the synchronization signal to maintain synchronization for demodulating the data signal.

Applicants respectfully submit that the combination of Eidson and Fukasawa fails to disclose or suggest all of the elements of the claims. For example, Eidson and Fukasawa do not disclose or suggest "powering on or off at least one branch of the power amplifier according to the received instruction to enable a logarithmic change in output power of the amplifier," as recited in claim 1 and similarly recited in claim 8. Similarly, Eidson and Fukasawa do not disclose or suggest "a determining engine, communicatively coupled to the receiving engine, capable of determining how many branches of a power

amplifier to power on or off according to the received instruction to enable a logarithmic change in output power," as recited in claim 9.

In the response to arguments section, the Office Action took the position that Eidson discloses these elements of the claims (Office Action, page 2). Specifically, the Office Action refers to Fig. 1, Column 2, lines 34-47, and Column 5, lines 55-67 of Eidson as allegedly disclosing the powering on or off at least one branch of the power amplifier according to the received instruction to enable a logarithmic change in output power of the amplifier. Applicants respectfully disagree.

Eidson discloses powering on or off one or more power amplifiers in an array of power amplifiers (Eidson, Fig. 1). Specifically, Eidson states "the invention ties a number of power amplifiers together and provides proper scaling and proper digital pre-distortion compensation to realize a linear, near distortion-free operation" (Eidson, Column 5, lines 64-67). Therefore, Eidson is directed to a plurality of amplifiers, each of which may be powered on or off. Eidson makes no mention of powering on or off a branch of a **single** power amplifier.

According to embodiments of the present invention, on the other hand, a power amplifier control system 285 controls the power amplifier 280 output power based on instructions received from a base station, other wireless node, or other source. For example, if a wireless device incorporating the transmitter section 200 is near a base station (e.g., BS 12), the base station can instruct the power amplifier control system 285 to decrease the output power on the power amplifier 280, thereby reducing power

consumption and reducing interference in any other nearby wireless devices. The power amplifier control system 285 will then instruct the power amplifier 280 to turn off one or more branches to decrease output power. However, if the wireless device incorporating the transmitter section 200 is far away from a base station, the base station can instruct the power amplifier control system 285 to increase the output power of the power amplifier 280 (Specification, paragraph 0028).

Furthermore, as illustrated in Figure 3A of the present invention, the power amplifier section 280a comprises 17 branches such as branch 300. For maximum power, all branches are turned on. For minimum power, all branches except one are turned off. Further, power can be adjusted in 2 dB steps between adjacent power settings. To turn off each branch, cascade device bias is connected to each Control (Vdd/ground) (Specification, paragraph 0029).

Eidson, as discussed above, does not disclose or suggest "powering on or off at least one branch of the power amplifier according to the received instruction to enable a logarithmic change in output power of the amplifier," as recited in the claims. Eidson only discloses powering down one or more power amplifiers in an array in order to minimize distortion. Applicants respectfully assert that the powering down of one or more amplifiers in an array of amplifiers does not correspond to powering on or off the branches within a single power amplifier according to received instructions to enable a logarithmic change in output power of the amplifier, as recited in the present claims. As such, Eidson fails to disclose or suggest all of the elements of claims 1, 8, and 9.

Furthermore, Fukasawa also does not cure this deficiency in Eidson. As such, the combination of Eidson and Fukasawa fails to disclose or suggest all of the elements of claims 1, 8, and 9.

Claims 2-7 and 10-14 are dependent upon claims 1 and 9, respectively. Thus, claims 2-7 and 10-14 should be allowed for at least their dependence upon claims 1 and 9, and for the specific limitations recited therein.

Claims 15-17 were rejected under 35 U.S.C. §103(a) as being unpatentable over Eidson in view of Miyamoto (U.S. Patent No. 7,023,275). The Office Action took the position that Eidson discloses all of the elements of the claims, with the exception of the transistors being arranged in a logarithmic scale. The Office Action then relies upon Miyamoto as allegedly curing this deficiency in Eidson. The rejection is respectfully traversed for the reasons which follow.

Claim 15, upon which claims 16 and 17 are dependent, is directed to a power amplifier. The power amplifier includes a plurality of branches for controlling transistors, and a plurality of transistors, each transistor being communicatively coupled to a branch of the plurality of branches. The transistors are arranged in a logarithmic scale, thereby enabling a logarithmic change in output power with the powering on or off of a transistor.

As will be discussed below, Eidson and Miyamoto, whether considered alone or in combination, fail to disclose or suggest all of the elements of claims 15-17, and therefore fail to provide the features discussed above.

Eidson is discussed above. Miyamoto discloses a variable gain amplifier. The variable gain amplifier includes an amplifying transistor which amplifies an input signal, and a current path control section which controls a size of the amplifying transistor and a path of a current through the amplifying transistor. When the size (W/L) of the amplifying transistor is decreased or increased under constant current maintained by the current path control section, the index of linearity is increased or decreased, and the gain is decreased or increased.

Applicants respectfully submit that Eidson and Miyamoto do not disclose or suggest "a plurality of transistors, each transistor being communicatively coupled to a branch of the plurality of branches" for controlling transistors, as recited in claim 15. In the response to arguments section, the Office Action alleges that Eidson discloses this limitation of the claims in Figure 6 and Column 14, lines 50-55 (Office Action, page 3). However, Applicants respectfully disagree.

Figure 6 of Eidson merely discloses data receiving circuitry 610, processing circuitry 620, a power amplifier array 630, impedance matching circuitry 640, an impedance matching array 661, and an antenna 650. Eidson also teaches that the impedance matching "provides for substantial suppression of harmonics (of the carrier frequency) created by transistor switching within power amplifier arrays" (Eidson, Column 14, lines 50-55).

As recited in claim 15, however, embodiments of the present invention include a plurality of branches for controlling transistors, where each transistor is coupled to a

branch of the plurality of branches. Eidson, as discussed above, fails to disclose or suggest such a configuration. Miyamoto also fails to cure this deficiency in Eidson. Thus, the combination of Eidson and Miyamoto fails to disclose or suggest all of the elements of claim 15.

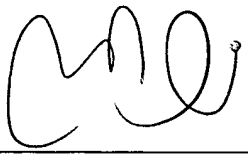
Claims 16 and 17 are dependent upon claim 15. Therefore, claims 16 and 17 should be allowed for at least their dependence upon claim 15, and for the specific limitations recited therein.

Applicants respectfully submit that the cited prior art fails to disclose or suggest all of the elements of the claimed invention. These distinctions are more than sufficient to render the claimed invention unanticipated and unobvious. It is therefore respectfully requested that all of claims 1-17 be allowed, and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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